

# **Environmental services and market coordination: the role of local intermediary organizations in the program of Payment for Environmental Services in Costa Rica**

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**Abstract:** The program of Payment for Environmental Services (PESP) in Costa Rica is considered as a reference since it has been a pioneer national PES program and has been successful regarding total contracted area and the level of investment. Whereas many debates have been developed regarding its environmental efficiency and its poverty impacts, discussion on its nature are still critical and open a continuous debate on PES definitions. Although intermediary actors are important stakeholders in the PES functioning, their role has been poorly analyzed yet. Mobilizing the concept of global commodity chain, transaction cost and system of services, we analyze the role of the local intermediary organizations (LIO) in the functioning and performance of the PESP, in particular regarding small farmers access to PESP. We show that LIO have different origins, structure, visions and objectives about the forest sector and PES program. Although they are not clearly reducing landowners' transaction costs, they are facilitating smallholders' access to the program thanks to the provision of a set of tangible and intangible services. They reduce information asymmetry in the system and enlarge the scope of PESP with alternative complementary schemes. Finally PESP appears neither as pure market coordination nor a hierarchical coordination, but a complex hybrid institution, where public private partnership is taking place between central public intermediary (FONAFIFO) and private local intermediary organizations.

## 1 Introduction

Payment for Environmental Services (PES) emerged in the 90s and developed rapidly in the 2000s as a mechanism to overcome limits of existing instrument for conservation (Wunder, 2005). Following the millenium ecosystem assessment, attention of scholars and policy makers rose rapidly on PES mechanism and led to two main debates. A first debate emerged regarding definition and conceptualization of PES. Whereas first definition of PES proposed by Wunder (2005) put emphasis on contractual agreements and market characteristics, a more comprehensive definition was further proposed, which conceptualized PES as collective action (Muradian et al., 2010). Along with this debate, a discussion emerges on the characterization of PES governance. Whereas some authors tends to consider PES as a market coordination (Wunder et al., 2008), others highlight the complex nature of PES and its hybrid governance (Muradian and Rival, 2012). The second debate on PES is related to its effect and impact on conservation and development. Whereas some authors argue for the potential of PES to face environmental and poverty alleviation issues under certain conditions (Engel et al., 2008; Milder et al., 2010), other have a more skeptical consideration underlying genuine limits of PES schemes (Muradian et al., 2013).

In these two debate, few attention has been given to the PES intermediary, that is to say the actors that facilitate the transaction between between ES users and providers (Wunder, 2005), or the transfer of resources between actors (Muradian et al., 2010). However, in all PES schemes, one or various actors are playing this role, and thus participate to PES coordination and may influence its results.

Considered as a PES reference, the case of the Payment for Environmental Services Program (PESP) in Costa Rica has been largely analyzed (Schomers and Matzdorf, 2013). Its nature (Wunder et al., 2008; Fletcher and Breitling, 2012), environmental effects (Arriagada et al., 2012; Daniels et al., 2010; Robalino et al., 2011; Sánchez-Azofeifa et al., 2007), economic and social implication (Miranda et al., 2003; Ortiz et al., 2003; Zbinden and Lee, 2005), and institutional performance (Legrand, 2013) has been largely discussed. In the implementation of the PESP, the role of the National Forestry Fund (FONAFIFO), as central intermediary of the mechanism, has been analyzed (Pagiola, 2008) as well as the participation of diffferent stakeholders in PESP governance (Le Coq et al., 2013). However, although some authors highlight the role of local forestry organizations in the development of Costa Rican forestry sector (Barrantes, 2009), and their involvement in the implementation in the PESP (Méndez Gamboa and Salazar Chaves, 2010), their role in PESP

functioning and their contribution to the results of PESP have been poorly analyzed yet.

Thus, this communication aims at analyzing the role of the local intermediary organizations in the functioning and the results of the PESP.

After a setting a clarification background regarding intermediary in PES literature and in the Costa Rican PESP functioning (Section 2), we present a specific analytical framework to analyze the local intermediary organizations' role and contribution to the PESP results. Then we analyze the situation, activities and strategy of these organizations (section 3), and we discuss their contribution to PESP results (section 4). We conclude discussing the implication of the role of these organizations on the characterisation of the governance of the PESP (section 5).

## **2 Background**

### **2.1. Intermediaries in PES literature**

Consideration on intermediaries in PES has been mainly part of a wider discussion on the role of organizations and institutions in the development and delivery of PES (Bosselmann and Lund, 2012). Many roles and functions of the intermediaries have been point out in the PES functioning: 1) setting up ES market and transferring payment from users to providers (Vatn, 2010), mediating and arbitrating among different parties involved in PES Schemes (Pham et al., 2010), or building trust between different stakeholders (Perrot-Maitre, 2006). While there is no consensus on the role and definition of PES intermediaries, but we can basically define PES intermediaries as an actor that facilitates the transaction or agreement between the ES provider and ES users.

Regarding the potential effect on PES performance , intermediaries are often considered as a way to favor inclusion of poor ES providers in the schemes (Bracer et al., 2007; Corbera and Brown, 2008), especially thanks to their ability to aggregate supply of small holder and mediate with buyers (Bracer et al., 2007). As transaction cost is seen as a limitation for PES development, economy of scale is seen as an institutional mechanisms to reduce transaction costs for low-income ES sellers (Bracer et al., 2007). Intermediaries can also contribute to reduction of transactions costs through automacy of payments (Kemkes et al., 2010). They facilitate the identification of local needs and priorities, and thus can orient ES selling toward this priority (Rosa et al., 2003). They also can attract investors by 'bundling' projects within a country to market a large supply of ecosystem services(Chomitz et al., 1999).

## 2.2. Costa Rican PES program and intermediaries

Costa Rican PESP has been developed in the 1997, in the continuity of existing forestry incentives (Daniels et al., 2010; Pagiola, 2008). According to 4th forestry law # 7575, PES formally recognize 4 ES provided by forest and trees plantation : mitigation of green house gazes, protection of watershed and hydrological services, biodiversity conservation, and scenic beauty (Pagiola, 2008).

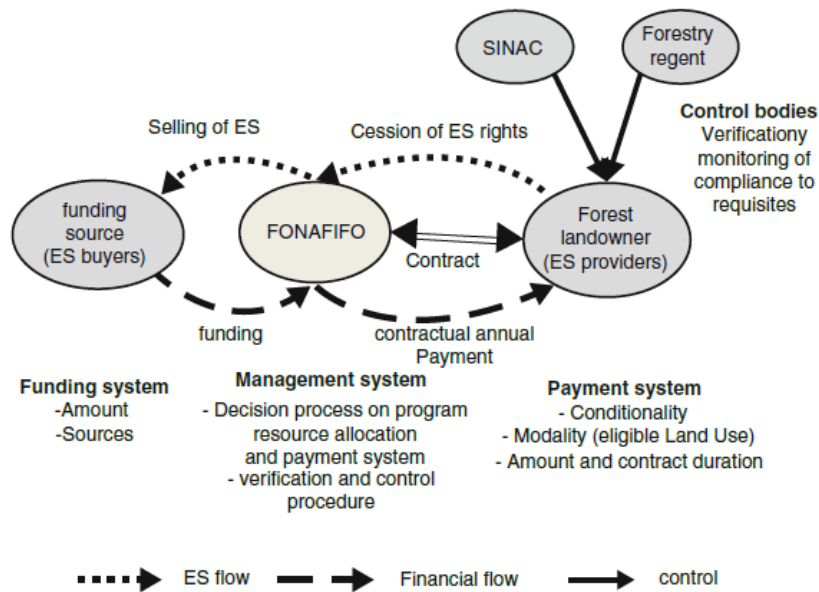
Funds for the PESP come from different sources. The main sources are the contribution through national fuel tax, the loans and grants from international donors, while private contracts represented around 3 % of all funds (Blackman and Woodward, 2010). Due to the importance of public funds in the PES program, PESP has been classified as government-financed PES (Wunder et al., 2008).

PES to forest land owners are done for different purposes, which are called PES modalities. PESP manage nowadays 5 main modalities: Conservation of Forest, Reforestation, Forest Regeneration, Sustainable Forest Management, Tree plantation in Agro Forestry System (AFS). The main modality is the conservation modality, which represents 89 % of total budget (Blackman and Woodward, 2010). Although the mayor amount of the PESP is dedicated to this modality, the demand for Conservation PES from land owner is two times higher than the available amount. A selection and prioritization procedure has been set to focus payment according to environmental and social criteria. Each year, funds available for each modality and criteria for prioritization of applicants are published in an executive decree (Le Coq et al., 2013).

In the functioning of Costa Rican PES program, we can identify two types of intermediaries. The first intermediary is the National Forestry Fund (FONAFIFO). FONAFIFO is a semi autonomous agency attached to the Ministry of Environment and Energy (MINAE), managed by a public-private board (Le Coq et al., 2013). According to the forestry law, FONAFIFO is in charge of PES program management, that is to say raising funds for the program (i.e. selling ES from Costa Rican forest and plantation), and distribute them to the forest land owner for the provision of ES from their forest or tree plantation (i.e. payment of ES to the ES providers). Thus, FONAFIFO set contracts with forest landowners (Fig. 1), where the former is engaged to make the payment, and the latter give their rights on the ES of their their forest, and commit to assume forest protection, reforestation, tree plantation in AFS, regeneration or sustainable management practice. The direct monitoring and control of the forest landowner is done by a private actor, a certified forest engineer, the forestry regent (*regente forestal*), and the

overall control of the law by the landowner is under the responsibility of the National System of Conservation Area (SINAC) (Le Coq et al., 2013).

*Fig. 1: PESP functioning principle*



Source: Le Coq et al, 2013

Analyzing in more detail the implementation of PESP (Fig. 2), a second type of intermediary in the PESP can be identified: the Forestry Organizations which consist in a variety of organizations involved in PES implementation (Méndez Gamboa and Salazar Chaves, 2010). Although their numbers vary according to definition<sup>1</sup> and authors (Borge Carvajal, 2006; Bosselmann and Lund, 2012; Méndez Gamboa and Salazar Chaves, 2010), we can consider that they are 17 organizations currently playing a role of intermediary in PESP, that is to say facilitating the transaction between ES provider and the ES buyer (in that case, FONAFIFO, as the central intermediary of the system). According to Bosselmann and Lund (2012), more than half of the PES contract signed between 2005 and 2009 was facilitated by organizations and, in some canton it was up to 90% of all contracts (Bosselmann and Lund, 2012). According to other source, from 2000 to 2009, these organizations

<sup>1</sup> Some authors refers to Forestry Organization, as the affiliated to National Forestry Office (ONF) (Barrentes, 2009), while other only consider the organizations that are directly involved in PES activities, i.e. presenting PES demands to FONAFIFO (Borge Carvajal, 2006; Méndez Gamboa and Salazar Chaves, 2010).



**Tab. 1:** Importance of Local Intermediary Organization in Costa Rican PES Program collocation by modality (2000-2009)

PES Modality	Indicators	2000	2005	2009	Total (2000-2009)
Conservation	Total contracted (ha)	26 583	53 493	52 018	458 042
	Total contracted through LOI (Ha)	5 083	18 062	14 748	123 521
	% LOI on total contracted	19%	34%	28%	<b>27%</b>
Reforestation	Total contracted (ha)	2 457	3 602	4 018	33 930
	Total contracted through LOI (Ha)	562	802	725	<b>7 882</b>
	% LOI on total contracted	23%	22%	18%	<b>23%</b>
Agro forestry*	Total contracted (trees)		513 684	370 187	2 972 034
	Total contracted through LOI (Trees)		186 638	273 692	1 341 820
	% LOI on total contracted		36%	74%	<b>45%</b>

NB: LIO: Local Intermediary Organization

\*: Agro forestry modality begun in 2003;

Source: Authors adapted from ONF database presented in Méndez-Gamboa and Salazar-Chaves ( 2010)

These forestry organizations can have different status: cooperatives, Cantonal Agricultural Centre (CAC), foundation, nongovernmental organizations (NGO) associations (Méndez Gamboa and Salazar Chaves, 2010). Nevertheless, they all facilitate all phase of the process of application and implementation of PES (Bosselmann and Lund, 2012). These organizations prepare the demand from forest land owner, present it to FONAFIFO, and prepare the PES contract signature. When the contract is signed, they monitor and control the activities of landowner, realize the annual disbursement demands to FONAFIFO, they receive the fund and distribute them to the land owners. Moreover, since 2005, a quota in term of number of hectares to be contracted by modality has been assigned to these organizations in order to secure their participation, facilitate the planning of activities, and research of new beneficiaries of PES (Méndez Gamboa and Salazar Chaves, 2010).

Defined according the global capacity of these organizations and their potential development of activities, the quota is set to favor inclusion of smallholders<sup>3</sup>.

To take into account their specific function in PESP functioning, and differentiate them from FONAFIFO that is acting at national level, we will refer to these organizations as PES Local Intermediary Organizations (LIO), as their scope of activities is rooted in local areas.

### **3 Conceptual framework and method**

#### **3.1. Conceptual framework**

To analyze the role of LIO in the PESP, we mobilized three concepts from economic and sociology of organizations (Fig. 3): the concept of global commodity chain (Gereffi, 1994) transaction cost (Williamson, 1985) and system of services (Albert et al., 2001).

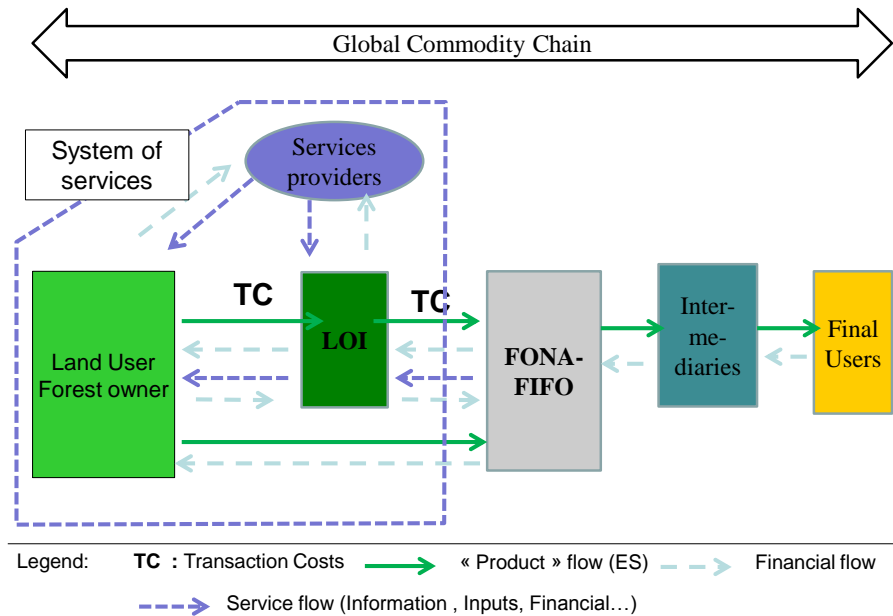
To analyze the role of the LIO in the PESP, we conceptualized the PES mechanism as a Global Commodity Chain (GCC). This conceptualization supposes to consider the ES as a commodity, which has been largely criticized (Kosoy and Corbera, 2010). Moreover, in the specific case of PESP, this conceptualization could be discussed as PESP nature is bundled and ES are not trade alone, but are considered as the results of land use adoption (forest conservation) or practice (reforestation, regeneration, tree planting in AFS). Nevertheless, we adopt this conceptualization as it is compatible with Wunders PES definition that has been applied to PESP by many scholars and also the promoters and managers of Costa Rican PESP. We also adopt this conceptualization in order to better characterize the role of LOI in the coordination and the transaction. Following this conceptualization, we consider that the ES of Costa Rican forest are sold from stage to stage from local producers, which are the forest land owner, to the final users who are its “consumer” (ES user). In this communication, we will not analyze all the stage of the commodity chain (till final consumer), but will focus our analysis on the first stages from landowner onward to FONAFIFO where LOI are involved.

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<sup>3</sup> In 2010, quota is for project of less than 80 ha for conservation and 50 ha en reforestation PES contracts (site ONF, <http://onfcr.org/document/mecanismo-de-distribucion-de-cuotas-psa-2010-ppt/> - accessed may 2013).



**Fig 3: Conceptual framework for LIO analysis in PESP**



Source: Authors

Developed to understand the nature of the firm (Williamson, 1985), the Transaction Cost (TC) has been mobilized in PES literature (Engel et al., 2008; Vatn, 2010)..Transactions costs for PES are due to information needed to create the mechanism, logistical costs, and maintenance costs (Wunder et al., 2008). Authors argues that TC may explain the emergence of different forms of PES in particular national PES and buyer-financed PES (Vatn, 2010). In this communication, we will not analyze all the TC of the PESP (i.e. Costs to create the mechanism, logistical and maintance). We will consider the TC in the GCC, but focussing our analysis on the the transaction between the beneficiary of PESP (forest land owner) and FONAFIFO, and the role of LOI in this transaction. Thus, we will consider TC as the costs incurred by participants in order to initiate or complete the transaction (setting the PESP Contract), considering five typical component of TC : search costs, negotiation costs, approval costs, monitoring costs, enforcement costs and insurance costs (Dudek and Wiener, 1996).

Finally, to analyze the strategy of LIO and their interactions with forest land owners, we mobilized the concept of System of services. This concept has been developed to analyze the agricultural extension services in the context of reduction of State support to agriculture (Albert et al., 2001). Services are the different goods or services necessary to achieve an activity; they can be

tangible services (such as inputs provision) or intangible services (such as information, advices...). This concept has been mobilized to understand strategies of farmers organizations to provide activities for agricultural and rural development (Le Coq et al., 2009). We will apply this concept to the LOI to analyze their relationship with forest landowner and their strategy, and the contribution of LIO activities to landowner activities.

Finally, to discuss the contribution of LOI to the results and performance of PESP, we will consider in this paper a limited number of criteria such as 1) economic efficiency though the Transaction Cost linked with LOI activity, 2) the contribution to the accessibility of landowner to the PESP, 3) the contribution to the economic interest of the land owner to adopt the PES contractual practice or land use, and 4) the contribution to the extension of the economic incentive opportunity toward the land owners.

### **3.2. Data collection**

Based on national office of forestry (*Oficina Nacional Forestal* - ONF) and FONAFIFO database, we establish a list of forestry organizations involved in PES. Then, crossing with information from FONAFIFO and other reports from ONF<sup>4</sup>, we identified a list of 17 organizations involved in PES intermediation<sup>5</sup>. We gather information about all these organizations regarding their trajectory, past and current global and PES related activities. This information was complemented with information on their current perception on forest issue, PES program and strategy during direct interviews with representatives of the organizations.

## **4. Local Intermediary Organizations**

### **4.1. Types, objectives and relative importance in PESP**

The analysis of LOI trajectories and objectives shows that LOI are of three main types: 1) agricultural oriented organizations such as cooperatives or cantonal agricultural centre (*Centro Agrícola Cantonal* - CAC), 2) forestry oriented organization, and 3) conservation oriented organization.

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<sup>4</sup> We used in particular the database of ONF developed by Norman in 2009, as well as a report from Mendez Gamboa & Salazar Chaves (2010).

<sup>5</sup> In 2009, there were 18 organizations involved in PES intermediation according to Bosselmann and Lund (2012), but one organization stopped this activity meanwhile.

The first type of organization is the most numerous groups of LOI (Tab. 2). The initial purpose of these organizations was agricultural development. They were created 70s or 80s either directly by the ministry of agriculture to provide agriculture services to farmers such as fertilizer distribution, agricultural technology transfer, in the case of CAC, or indirectly promoted by the administration to strengthen small farmers in agricultural development process, in the case of the cooperatives. These two categories of organizations developed forestry related activities with different vision and objectives. For the CAC, forestry activities have been a reorientation that enables them to survive the reduction of the public supports in agricultural sectors in the 80s-90s. This reorientation of their activities was also seen as a way to overcome difficulties in agricultural sector and environmental problems (soil erosion, water scarcity) in their area. Hence, in the 80s with the support from international projects and/or the General Direction of Forestry, some CAC developed reforestation programs. Nowadays, for these organizations, e.g. CAC Hojancha or CAC Nanyadure in the Nicoya peninsula or the CAC Puriscal or CAC Esparza in the Pacific Central region, forestry activities could be one of the mayor activities of the organization. In the case of the agricultural cooperative, development of forestry activities has been integrated to promote a diversification of activity and incomes of their members. But, contrasting with CAC, these organizations still maintain an important set of activities and services oriented toward the agricultural activities. That's the case for example for Coopeagri, one of the biggest LOI, but also a major coffee and sugarcane cooperative of the country. Although this type of LOI is the more numerous, it manages only a small amount of hectares of PES conservation and reforestation in comparison with the forestry oriented organizations (Tab.2). These organizations are more oriented toward SAF modality in which they collocate 44% of tree under SAF modality managed by LOI.

The second type of organizations, the forestry oriented organizations, consist nowadays in 3 large organizations (Tab. 2). This type of organization has been promoted specifically by the General Direction of Forestry in the 80s to incentive reforestation and sustainable forest management, and had been generally supported by international cooperation program at their early stage of development. These organizations are oriented toward reforestation and wood production for the wood industry such as Codeforsa, or tend to develop a more conservation orientation such as Asirea or Fundecor. They may be of different status, cooperative (Codeforsa), or association (Asirea) or NGO (Fundecor). Although many forestry oriented organizations was created in the 80s, their number have been reducing since then due to the reduction of direct support to forestry organizations (Barrantes, 2009). Thus, nowadays, only 3 organizations of this type are acting as PES intermediary. Nevertheless these

organizations are the biggest regarding PES intermediation, as they allocate 67% of the total area of PES conservation allocated by LOI, 76% of total area of PES reforestation allocated by LOI and 51 % of tree in SAF contract allocated by LOI (Tab. 2).

The third type of LOI, the conservation-oriented organizations, has been created more recently, in the late 90s – 2000s, in relationship with the raising awareness of the environmental issue in Costa Rica. Association or foundation, their primary objective is the conservation of natural habitat. They are working in biologic corridors (such as the association of the Biologic Corridor of the Talamanca Chain - CBCT) or with forest reserve (Fundecongo in the Peninsula of Nicoya). For these organizations, the PES program is seen as a way to consolidate conservation efforts, and they are mainly oriented toward PES conservation modality (Tab. 2). PES intermediation is usually not the main activities of the organization since most of them developed other activities such as eco-tourism activities.

**Tab. 2:** PES intermediation by types of organization from 2000 to 2009

PES Modality	Criteria	agriculture oriented organizations n=10*	forestry oriented organizations n=3	conservation oriented organizations n=4**	total n=17
Conservation	Total area (ha)	26 282	83 221	14 018	123 521
	Total area (%)	21%	67%	11%	100%
	Average area per organization (ha)	2 920	27 740	7 009	8 823
Reforestation	Total area (ha)	1 844	5 971	67	7 882
	Total area (%)	23%	76%	1%	100%
	Average area per organization (ha)	205	1 990	34	563
Agro forestry	Total tree number (trees)	594 162	685 008	62 650	1 341 820
	Total tree number (%)	44%	51%	5%	100%
	Average tree number per organization (tree)	66 018	228 336	31 325	95 844

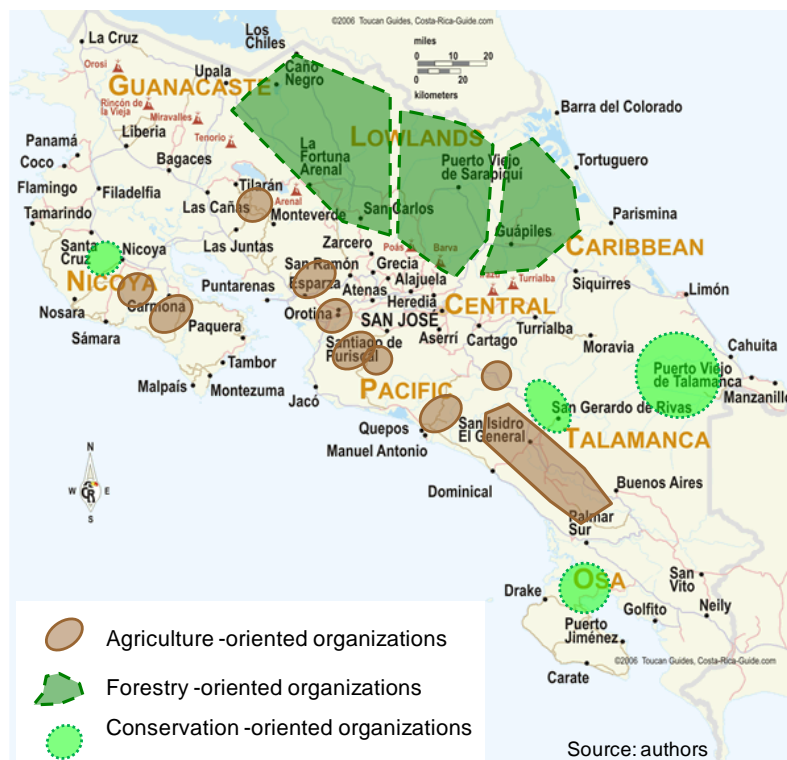
NB: \* data available for 9 organizations, \*\* data available for 2 organizations

Source: Adapted from ONF database Méndez Gamboa and Salazar Chaves, 2010

## 4.2. Spatial distribution and scope of action

Local Intermediary Organizations are present in all the Costa Rican regions (Fig. 4). Each LOI has its area of intervention; there is no concurrence between them related to forest landowner. The three forestry oriented organizations have the larger scope of actions and are working in the northern and eastern areas. Except Coopeagri that have a large scope of intervention, the agricultural oriented organizations have a local scope of intervention.

*Fig. 4: Spatial distribution of Local Intermediary Organizations in Costa Rica*



*Source: Authors, interviews in 2011-2012*

*NB: a conservation oriented organization was not represented in the map as it has a scattered zone of intervention throughout the country.*

## 4.3. Activities and strategy

Local Intermediary Organizations developed a more or less large scope of activities, including PES intermediation.

***Activities of PES intermediation.*** All these LOI developed different services to their members or landowner to facilitate their access to PES. Linked with PES intermediation, they assume the following activities. First, they promote the PES by broadcasting information on PES content, procedure, access conditions. Second, they prepare the file of PES demand, assembling necessary documents from land owners, and verifying the acceptability of the demand. When problem occurs they help to achieve resolution by assisting landowners in administrative or technical procedure. When the pre-demand is accepted by FONAFIFO, they prepare the contract between land owner and FONAFIFO, and realized the necessary technical studies, and management plan. They also assist the landowners in the signature of the contract. When the contract is signed, they received the payment and distribute to the final beneficiary of the program. Further they monitor activities of the landowner and make the demand for disbursement every year during the contract duration.

To develop these activities, they need to mobilize different abilities: administrative, technical, and juridical ones. Work organization and human resources management differs according to organizations. Some organizations conduct all the function internally with their own employees, other rely on internal and external human resources. Regarding administrative activities, they generally perform it with their own human resources. For the technical abilities (forestry, geographic information system), they have in general their own forestry engineer accredited as forestry regent to set regency contract and assume the technical expertise. However, some small organizations use the services of independent private forestry regent, as they don't have enough members with PSA to cover a full time cost of forestry regent. Finally, regarding juridical abilities, most of the organizations mobilize external human resources.

***Activities aside PES intermediation.*** Aside PES intermediation, the LIO perform other activities according to the objective of the organization. Among agricultural oriented organizations, the main other activities are agricultural activities promotion (Tab.3). The CAC are involved agricultural fair administration which provide them regular incomes in comparison with PES intermediation. Some CAC are nowadays totally specialized in forestry related activities and then PES is an important activity of their incomes. The cooperative developed many activities to support agricultural production such as input supply or extension, but they also develop processing and commercialization activities. PES intermediation is a diversification activities, that provide them a complement but they don't depend on them. The forestry oriented organizations have developed generally activities oriented toward the promotion of forest sector, including processing, industrialization, and

services of information on wood price. Some of them also tend to develop project of promotion of bio products. As PESP has become one of the principal forestry support policy, the PES intermediation is an important activity for the organization. Finally, the conservation oriented organization developed mainly environmental education activities and promotion of eco-tourism activities.

**Tab. 3:** *Local Intermediary Organization and activities profiles*

Activities	agriculture oriented organizations n=10*	forestry oriented organizations n=3	conservation oriented organizations n=4**
<b>Agriculture promotion activities</b>			
Support to agricultural production	100%	0%	0%
Agricultural fair administration	70%	0%	0%
Agricultural products processing and commercialization	50%	0%	0%
<b>Forestry promotion activities</b>			
Plant nursery	50%	100%	0%
forestry advice	100%	100%	25%
maintenance / processing / marketing	10%	100%	0%
forestry credit	20%	100%	0%
<b>Conservation promotion activities</b>			
environmental education	20%	100%	100%
tourism related	10%	33%	50%
<b>Others</b>			
commercial	20%	0%	0%
credit	30%	0%	0%
social	40%	0%	0%

*Source: Authors, ONF data base 2009 and interviews in 2011-2012*

## 5. LIO y PESP performance

### 5.1. LOI and PESP transaction costs

Transaction Cost of PESP is an important issue as it affects the financial efficiency of the program and the access of small holder to the program. TC can be grasped at two levels, TC at FONAFIFO level and TC at landowners level.

Regarding financial efficiency of the PESP attention has been paid to the operational costs of FONAFIFO as the main intermediary of the PESP. Thus,



since its creation, the cost of operation of the PESP has been carefully regulated by decree (Tab. 4). Since its beginning, the maximum percentage of the operational cost of the PESP total budget has been changed. When the program begun in 1997 the maximum administrative cost of PESP was established 7% to be captured by FONAFIFO and distributed between FONAFIFO (5%) and SINAC (2%) to cover respectively the operative costs PESP assumed by FONAFIFO and the control cost assumed by SINAC. Then, this amount was upgraded in 2006 to some 10% raising the share to FONAFIFO to some 7% and including a 1% share to ONF. In 2008, it further jumped up with the reforms of FONAFIFO status that implies a change of administrative structure. It raised then some 21 % including 19 % for FONAFIFO, 1.33% to SINAC, and 0.67 % to ONF.

This cost of operation includes the Transaction Cost of both the transaction between FONAFIFO and PESP Funders (to set contract with ES buyers) as well as transaction between FONAFIFO and ES providers (forest landowners). An rough analysis of the structure of FONAFIFO functioning enable to estimate that the majority of this cost is mainly dedicated in the administration of the relationship with the ES providers<sup>6</sup>.

**Tab. 4: PESP transaction costs at FONAFIFO level and its distribution (1997 to 2013)**

	1997	2006	2008
Maximum % operational cost on total PESP budget	7%	10%	21,00%
To FONAFIFO	5%	7%	19,00%
To SINAC	2%	2%	1,33%
To ONF		1%	0,67%

Source: Authors based on Decree 25721 of 23/01/1997; Decree 30762 of 09/10/2002; Decree 32750 of 11/11/2005, Decree 33205 of 05/06/2006 and Decree 34761 of 15/07/2008.

The second level where TC can be evidenced is between forest landowner and FONAFIFO. This TC takes into account the different element that enables landowner access to PES contract with FONAFIFO. This cost is highly variable and include the research of a regent, the cost of the regent, the administrative costs to set the contract (that may include various adjustment to comply with the PESP legal requisite such as land title), the cost of monitoring and maintance of the contract. Among this different costs, the cost

<sup>6</sup> As FONAFIFO represent around 110 persons, two areas are specifically in charge of downward relationship, i.e. promotion and marketing of ES unit and proyect definicion unit, that both represent 6 persons. Evenif we consider that other unit also contribute to the monitoring of the contract toward downward actors. We can estimate that downward costs represent around 10 - 30 % of the total administrative cost.

of the forestry regent in charge of the technical studies (management plan), and the monitoring and control that the landowner comply with the contract or the LOI is regulated: the fee paid is limited to an 18 % of the amount of PES received by the beneficiary. Recent studies shows difference between private regent regency costs and LIO costs including regency (Tab. 5). In the northern region, regency cost paid by farmers range between 10 to 18 % depending on the size of the contract. Whereas an average declared regency cost was 12,26 % in the case of private regent, it was of 15,40 % though LIO<sup>7</sup> (Lamarre, 2012). In the southern region, a recent studies of PSA, confirms the same tendency, whereas regency costs were between 5 to 10 % for private regent, it was between 12 à 18% for LIO regency (Roussel, 2012).

**Tab. 5:** *PESP transaction costs at Farmers level: regency costs*

	<b>Cost of regency (private regent)</b>	<b>Cost of regency (LIO regency)</b>
northern region (a)	12,26 %	15,40%
southern region (b)	5-10%	12-18%

Source: (a) Lamarre (2012), (b) Roussel (2012)

Thus, in comparison with private regent facilitation, there is no evidence that LIO is reducing TC assumed by landowners. However, this difference can be explained by the average area of contract assumed by LIO. Indeed, in area where LIO is operating, private regents tend to work with larger land owners and thus achieved economy of scale (as the proportion of fix cost of in the intermediation activities, is higher than area proportional cost) in comparison with LIO that work with small contracts.

## **5.2. LIO and provision of a set of services**

Contribution of LIO to the performance of PESP in term of accessibility and interest of PESP can be seen through the set of services provided by LIO to the landowner.

Regarding system of services around the landowner, the LIO contribute to propose two set of services (Fig. 5): 1) a chain of services that facilitates landowner access to the PESP, 2) a chain of service that enables to better economically valorize the contractual practice or land use under PES contract.

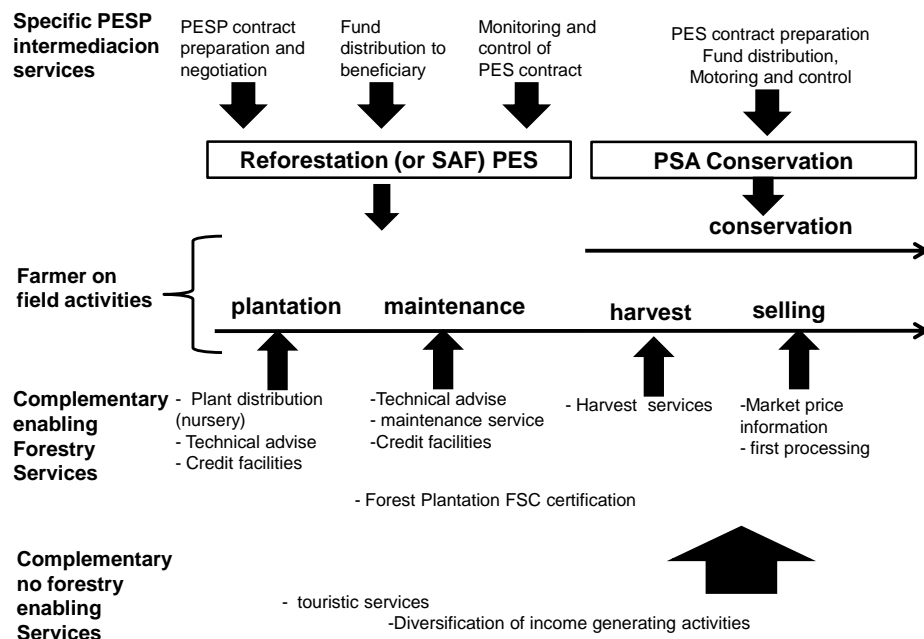
The first set of services is the integrated set of services around the function of PESP intermediation that consist in chain of different specific services of

<sup>7</sup> The LIO put tin practice digressive tariff raising from 15.8 to 10.8 for larger scale

different nature (administrative, technical, juridical) organized toward the resolution of the complex procedure of application to the PESP.

The second subsystem of services is the (more or less complete) set of services that enable to implement contractual practice (such as reforestation) or land use (such as protection) and valorize economically these practices or land use. As such, the forestry oriented organizations and most of the agricultural oriented organization that promote reforestation, also assume a supply system of tree seedling, facilitate access to specific credit system, technical advice system, and some of them also propose services of plantation maintenance and/or wood extraction. To help farmer better valorize their tree plantation, some of them also propose a first processing facilities or marketing services, and or facilitate the access to sustainability certifications (such as FSC - Forest Stewardship Council) that enable to get better wood marketing opportunities. To support forest conservation, some LIO also propose a support service that enables income diversification through sustainable agricultural production, or Eco-tourism.

*Fig. 5: Farmers activities, land use and system of services*



Source: Authors derived from LOI interviews 2010-2012

### **5.3. LIO and complementary PES**

Some LIO with more financial and human capacities developed additional projects to incentive conservation or reforestation.

Two main examples can be mentioned. The first one is “Solidarity PES” developed by Fundecor. This specific PES mechanism is funded by a private transport enterprise (a Rent A Car) committed in environmental issue and that wanted to compensate the carbon emission. It benefited also from complementary funding support of cooperation funding, enable to finance some 2000 ha of conservation PES between 2010 and 2012. This mechanism enable to integrate some forest landowners committed in forest conservation but that could not access PESP for legal reasons (land tenure) or for limited resources of PESP funding and the system of priority.

Another example is the Coopeagri Clean Development Mechanism project that enables to raise additional fund for reforestation, regeneration and tree planting in AFS over 892 hectares. This project developed by Coopeagri benefited also from the support from FONAFIFO that is using it as a pilot to access this financial resource. It enables to extend the source of funding of FONAFIFO and enlarge the number of local landowner that benefit from a financial incentive.

It is worth notice that the development of complementary PES incentive system is also developed by some forestry organizations that are not directly involved in PESP. However, this initiative contributes to the same objective of national forest conservation and recuperation of the national forest area. In this regards, we can mention pilots’ projects developed by an association supporting agroforestry sytem (ACICAFOC) in the indigenous region of Costa Rica.

### **5.4. LIO, representation of forest landowners and coordination with FONAFIFO**

The LIO, through their membership to the National Forestry Office (ONF), or directly, represent the forest landowner interest and play a role in the decision making process of the PESP. They contribute in the rule setting though different form. First, LIO are one the actors (along with private regent and Fonafifo local staff) that provide feedback on the situation in local areas. Moreover, with their distribution among the country, they contribute through ONF to provide nationwide information. Secondly, they are directly involved in PESP management through their representation in the FONAFIFO board

(as 2 out of 5 members of the board comes from ONF). Thus, they can directly discuss PESP rules and they were particularly active in different changes, such as the creation of SAF modality in 2003, the reevaluation of the amount of PES reforestation contracts in 2009 or the reactivation of sustainable forest management in 2010.

Regarding coordination between LIO and FONAFIFO, we can observe that LIO are recognized by FONAFIFO administration as a partner that cooperates in the implementation of the PESP, as they contribute to promotion of the program, the search of beneficiary that cope with priority criteria's. Their activities of preparation enable to meet the objective of allocation of PESP and small farmer's access to PESP.

## **6. Conclusion**

In the Costa Rica, a set of local intermediary organization is involved in the PESP implementation since its beginning. These organizations, which a large majority existed prior to the PESP implementation, have different trajectories, visions, objective and strategy. Three types of organizations according to their main orientation have been identified: agricultural, forestry and conservation oriented organizations. Although they all carry out PES intermediation activities for forest land owners, they are not specialized in this activity. All of them have developed a set of activities, according to their main orientation. Agricultural oriented organizations are involved in agricultural product processing or commercialization. Forestry oriented organizations often developed other activities regarding reforestation and wood production. Conservationist organizations are often involved in tourism ecotourism activity or promotion..

These Local Intermediary Organizations are important in the PESP implementation and are contributing to its results in different way. If they LIO do not clearly contribute to reduce transactions costs, they contribute to the results of PESP in different dimension. First, providing a specific integrated system of PESP intermediation services, they facilitate access to PESP to small land owner with limited capacities. Second, creating an enabling system of services around smallholders for reforestation and forest conservation, they help the small holder to comply with the PESP contractual practices or land use. More over, they contribute to increase income generation opportunities from PES contractual practices or land use. Third, developing complementary private PES schemes, they contribute to enlarge the number

of forest owner receiving incentive beyond PESP financial capacity and juridical limitations.

Finally, taking into account the involvement of these organizations in the PESP implementation and their contribution to its results, the PESP can be considered neither as a pure market coordination, nor a pure hierarchical coordination, but as a hybrid coordination system where public intermediary (FONAFIFO) collaborate with private intermediaries (LIO) to achieve collective and national goals of forest conservation.

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